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April 10, 1984

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 Yellowstone City-County Planning Board, 510 North 28th St., Billings, MT 59101  
 Yellowstone County Commissioners, Courthouse, Billings, MT 59107  
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 Butte, MT 59701  
 Soil Conservation Service, Federal Building, Bozeman, MT 59715  
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 Information Unit, Department of Health & Environmental Sciences, Helena, MT 59620  
 Environmental Information Center, P. O. Box 1184, Helena, MT 59624  
 Montana Historical Society, 225 N. Roberts, Helena, MT 59601  
 James Worthington, Alpha Engineers Montana, Inc., 5044 Midland Road,  
 Billings, MT 59102  
 Cal Cumin, Cumin Associates, 528 Grand Ave., Billings, MT 59101  
 Clarence Foos, Route 2, Box 1196, Laurel, MT 59044

RE: Northhill Estates Subdivision  
 Yellowstone County

Ladies and Gentlemen:

The enclosed Preliminary Environmental Review has been prepared for the Northhill Estates Subdivision in Yellowstone County and is submitted for your consideration. Questions and comments will be accepted until April 25, 1984. One extension of time not to exceed seven days will be granted upon request if there is sufficient reason for the request. All comments should be sent to the undersigned.

Sincerely,

*Steven L. Pilcher*

Steven L. Pilcher, Chief  
 Water Quality Bureau  
 Environmental Sciences Division

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PRELIMINARY ENVIRONMENTAL REVIEW

Division/Bureau Environmental Sciences Division/Water Quality Bureau

Project or Application Northhill Estates Subdivision

Description of Project The proposed subdivision will consist of a maximum of 95  
lots planned for two phases. Phase I will include 50 lots all of which are one  
acre or more in area. Use will be single-family residential with on-site individual  
water and sewer systems. The site of Northhill Estates is the SW 1/4 of Section 3,  
T 2 S, R 24 E, P.M.M., approximately one mile northeast of Laurel. A location map  
is attached.

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

	Major	Moderate	Minor	None	Unknown	Comments on Attached Pages
1. Terrestrial & aquatic life and habitats			X			*
2. Water quality, quantity and distribution			X			*
3. Geology & soil quality, stability and moisture			X			*
4. Vegetation cover, quantity and quality			X			*
5. Aesthetics					X	
6. Air quality			X			*
7. Unique, endangered, fragile, or limited environmental resources				X		
8. Demands on environmental resources of land, water, air & energy		X				*
9. Historical and archaeological sites					X	*



# POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

	Major	Moderate	Minor	None	Unknown	Comments on Attached Pages
1. Social structures and mores				X		
2. Cultural uniqueness and diversity				X		
3. Local and state tax base & tax revenue			X			*
4. Agricultural or industrial production			X			*
5. Human health				X		
6. Quantity and distribution of community and personal income			X			
7. Access to and quality of recreational and wilderness activities			X			
8. Quantity and distribution of employment			X			
9. Distribution and density of population and housing			X			
10. Demands for government services			X			*
11. Industrial & commercial activity				X		
12. Demands for energy			X			
13. Locally adopted environmental plans & goals				X		
14. Transportation networks & traffic flows			X			*

Other groups or agencies contacted or which may have overlapping jurisdiction Yellowstone City-County Health Department,

Laurel City County Planning Board, Yellowstone County Commissioners

Individuals or groups contributing to this PER. Alpha Engineers Montana, Fischer

Associates

Recommendation concerning preparation of EIS We recommend that an EIS not be  
prepared

PER Prepared by: James C. McCauley

Date: April 10, 1984

## POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

### 1. Terrestrial and aquatic life and habitats

Smaller mammals are known to inhabit the proposed site. Several bird species use the area because of its watercourses. Due to the proximity of the subdivision to the City of Laurel and existing subdivisions, the impact on larger game species such as deer or antelope should be minimal.

A sixteen acre area in the southeast corner of the site is to be dedicated as park. This wet area situated below the Big Ditch irrigation canal is prime habitat for small wildlife. The Yellowstone Audubon Society and Eastern Montana College have expressed an interest in maintaining the area as a wildlife preserve and educational study area.

### 2. Water quality, quantity and distribution

Each lot within Northhill Estates Subdivision will have its own well. A test well was recently constructed on-site by Davis Drilling and a Hydrogeological Report prepared by John McDermott. The test well was pumped for two hours at a rate of 60 gpm and for one and one-half hours at 75 gpm. An existing stock well located in Phase II was pumped for five hours at discharge rates of 14 to 30 gpm. Based upon this data it was concluded that wells suitable for residential use could be constructed to depths of 25 to 90 feet.

In terms of quality, the water does contain a significant amount of total dissolved solids and does exceed the recommended EPA secondary standard of 500 mg/l. The water may not be palatable to some individuals and could have a bitter taste due to its high sulfate content. It may have a laxative effect on some individuals. It would be classified as "hard" water and the use of water softening devices may be desirable.

One water quality parameter of particular concern is that of nitrate levels. High nitrate levels are thought to be detrimental to the health of infant children. Samples submitted thus far show very low nitrate concentrations in the groundwater aquifer. However, research has demonstrated that the nitrogen contained in domestic sewage is not readily removed by soil and thus an increase can occur with dense development of residential lots utilizing subsurface sewage absorption systems. Therefore, it is recommended that wells be drilled so that they penetrate the aquifer to the greatest extent possible. This will allow water to be drawn from an area less likely to contain concentrations of nitrate.

The use of on-site sewage absorption systems is limited to lots which meet the standard criteria for depth to groundwater, slope and setback from watercourses and wells. Extensive on-site soils testing and monitoring has been accomplished to detect suitable sites.

The overall impact of this development on water quality, quantity and distribution should be limited. Irrigation usage will tend to recharge the aquifer as will the treated sewage system effluent.

### 3. Geology and soil quality, stability and moisture

The soil at the Northhill Estates site has been described as a McRae-Lohmiller-Keiser association. On-site profiles indicate most areas consist of a cobbly or sandy loam with a small amount of clay loam present in a few profiles. The soil should provide adequate treatment of sewage effluent.

### 4. Vegetation cover, quantity and quality

Existing vegetation consists mainly of native grasses while the western portion above the High Ditch is a hay meadow. The area has been flood irrigated in the past but this practice will cease with residential development. The trend will most likely shift to grassed lawns which will be sprinkle irrigated. Some changes in stormwater runoff will result from road and home construction. Since roads will not be paved and the soils are porous, there should not be a significant increase in runoff amounts. Culverts will be provided at appropriate locations.

### 6. Air quality

An increase in air borne particulates can be expected due to dusty roads and wood burning stoves. This impact should be minor.

### 8. Demands on environmental resources of land, water, air and energy

This development will remove agricultural land from production. Some demand on the subsurface water aquifer will result from the change to residential use. Air resources may be impacted slightly.

### 9. Historical and archaeological sites

There are no known historical, archaeological or cultural sites in the proposed area. However, since no formal investigation has been made, it is recommended that a cultural resource survey be conducted in all areas which have not been previously disturbed.

## POTENTIAL IMPACT ON HUMAN ENVIRONMENT

### 3. Local and state tax base and tax revenue

The taxable valuation of residential lots as compared to agricultural property will increase the local tax base. This will be offset by the increased demand for government services such as schools and road maintenance.

### 4. Agricultural or industrial production

The development of this subdivision will remove 146 acres of agricultural land from production. A portion of the property is a hay meadow while the rest is grazing land. The site of Northhill Estates is reasonably close to the City of Laurel and is adjacent to an existing subdivision to the east.

10. Demands for government services

Northhill Estates lies within Rural Fire District 7 which has a fire fighting force of 30 volunteers and adequate equipment to handle emergencies. Ambulance service is provided by the City of Laurel. Police protection is under the jurisdiction of the Yellowstone County Sheriff's Office.

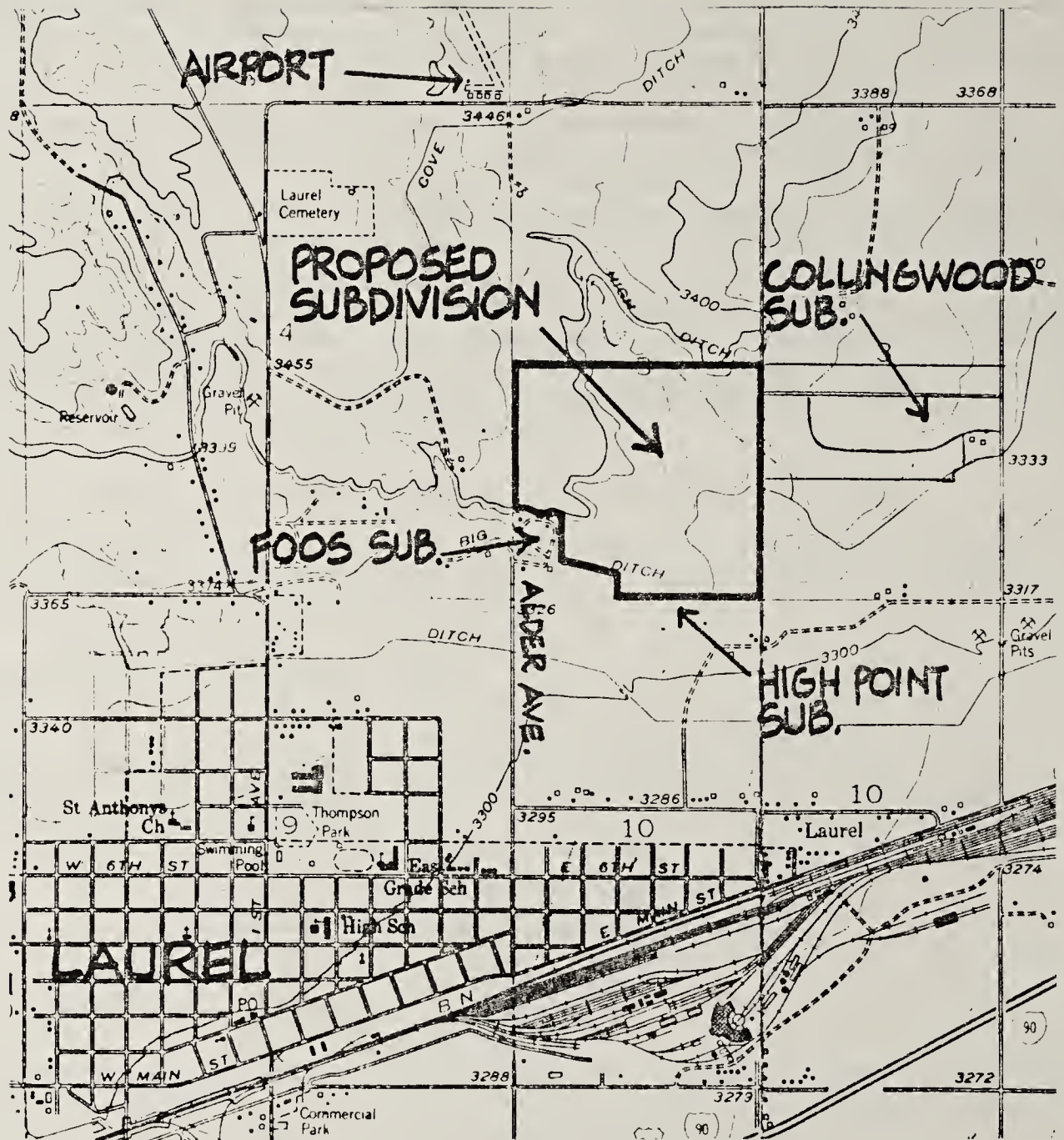
The subdivision will have only a minor impact on Laurel area schools. According to superintendent, Robert Singleton, the school district currently has the capacity to accomodate 300 additional students which would surpass the number of children expected from this development.

Solid waste will be transported by either the individual lot owners or a contracted hauler to the Laurel landfill.

14. Transportation networks and traffic flows

Interior roads will be constructed to county standards except for paving. Drainage will be provided by roadside swales and culverts. Alder Avenue which lies on the western edge of the development will serve as a major artery once the second phase of Northhill Estates is constructed. Currently, appropriate access is available through Downy Road to the east.





LOCATION MAP